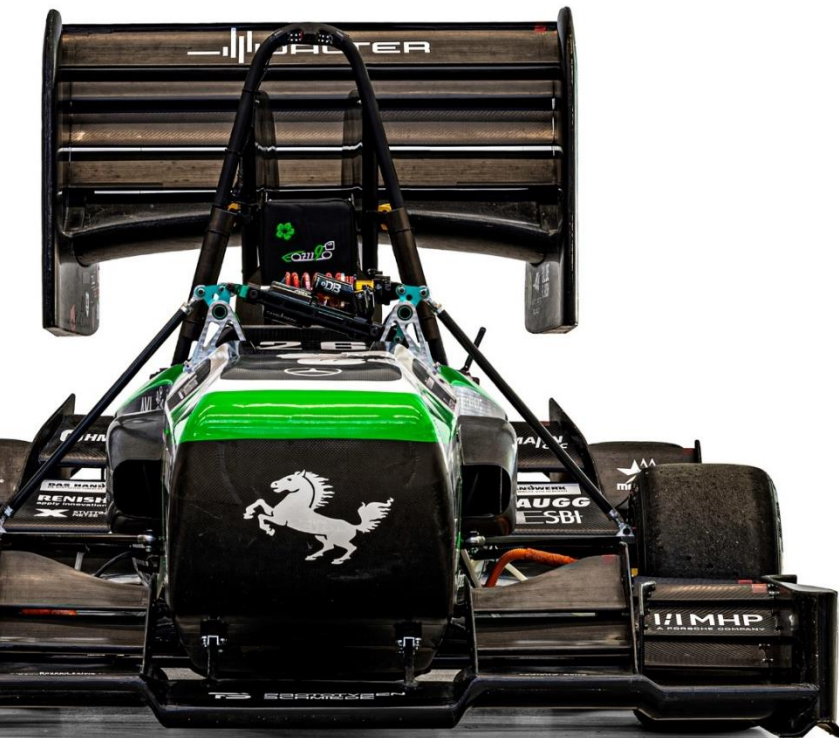


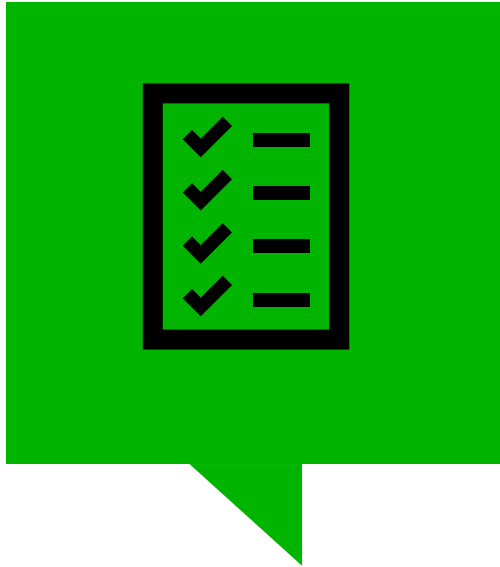


GreenTeam X Speedgoat

FS Symposium
Marius Goletz



Agenda

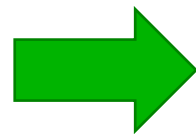


- Integration and testing of a new system
 - Steps for testing a new system
 - Experience: possible bottle-necks
 - Benefits
- Beyond the car: Speedgoat @electric drive test bench
 - General setup
 - Application of the Speedgoat system
 - Benefits

Integration and Testing – Steps

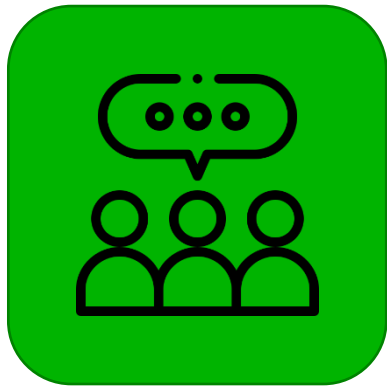


- Basic function check (startup, kernel transfer,...)
- Run a control models from low to high complexity
- Run a full model with car communication
 - Step by step, if you use different protocols (e.g. CAN & EtherCAT)



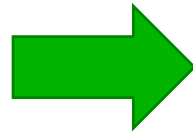
Implement it in your new car and be ready to race!

Integration and Testing – Experience



Bottle-Neck: Communication Setup

- easy to handle on the Speedgoat (Master) via Speedgoat Simulink Library
- oftentimes difficult on the slaves
- might increase startup time of your system
- can rarely cause crash of your system



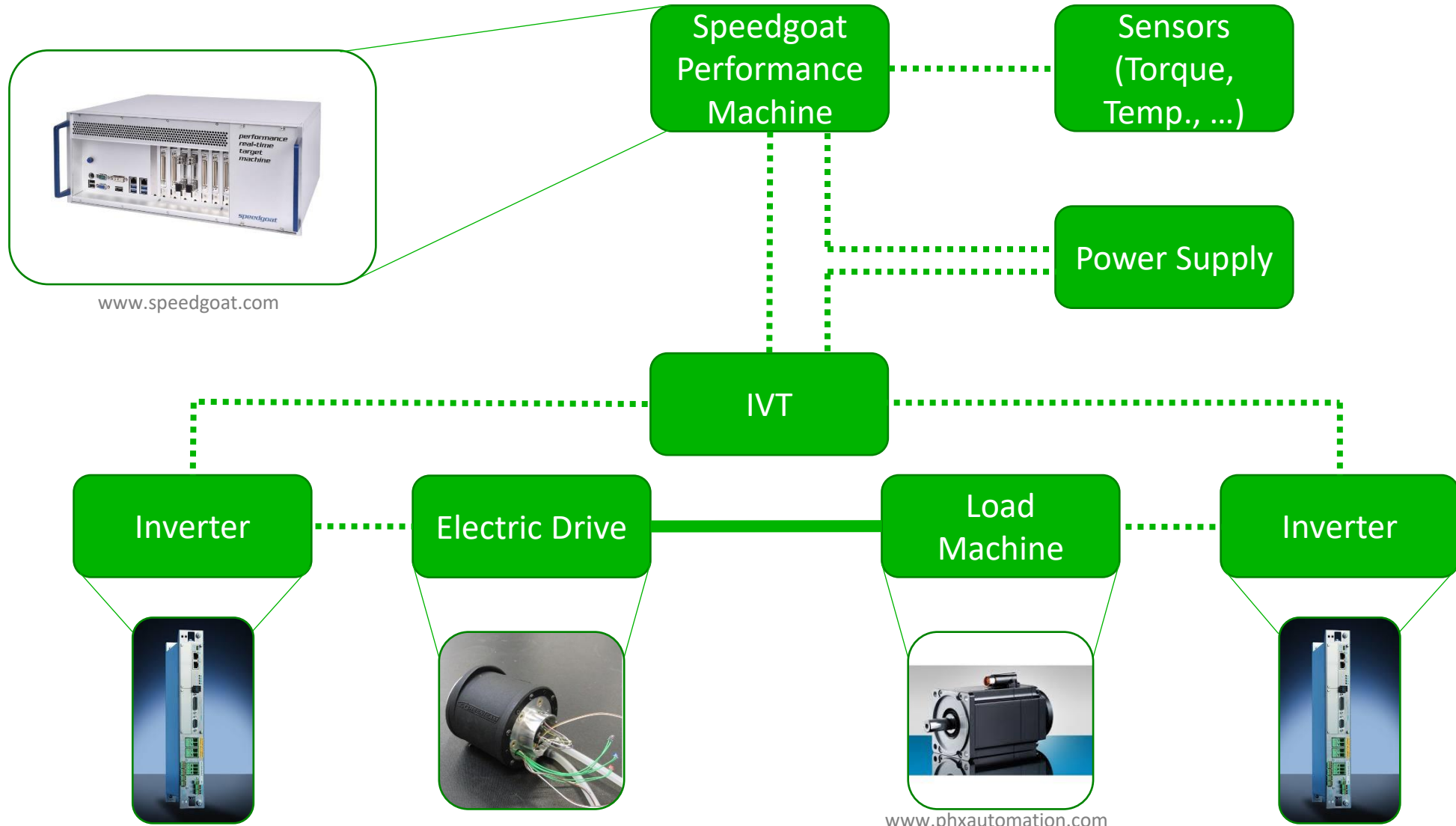
Allow enough time for debugging your communication network!

Integration and Testing – Benefits



- Open-Frame editions for saving weight and space
- Very robust against vibrations and temperature
- Huge computational power
- Allows multicore processing
- Speedgoat support very open-minded for ideas concerning packaging or general advice

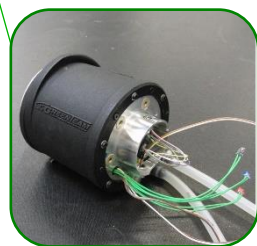
Electric Drive Test Bench – General Setup



www.speedgoat.com



www.amkgroup.com



www.phxautomation.com



www.amkgroup.com

Electric Drive Test Bench – Speedgoat



Speedgoat implemented as „Brain“ of test bench

- Communication master (CAN, EtherCAT)
- Controls the safety approvals and the emergency shutdown
- Controls the target values (setpoints) via a Simulink Realtime model
- Logs all data including internal variables

Electric Drive Test Bench – Benefits



- Setup close to our car – Software & Hardware
- Hardware configuration adjustable to specific needs (CAN, EtherCAT, A/D-Interfaces)
- Interaction via Matlab App
 - Switch on/off
 - Monitoring vital parameters
 - Plotting relevant data (e.g. torque)
 - Loading different trajectories
- Logging in „.mat“-format

GreenTeam Uni Stuttgart e.V.



Thank you for
your attention!